REMARKS

Status of the Claims

Claims 1-4 and 6-20 are pending in the present Application. Claims 1, 4, 12, 17, 18 and 20 are currently amended. Claims 21-25 are canceled. Claim 10 is currently corrected to change "or" to --and--. Claim 11 is currently amended to change the phrase "said components" to -- the insulating resin, the curing agent and the flame retardant--. These are clearly nonnarrowing claim amendments. Reconsideration and allowance of all of the pending claims are respectfully requested.

New matter is not being introduced into the Application by way of this Amendment. Claims 1, 4, 12, 17, 18 and 20 have been amended to recite that the flame retardant comprises a salt of a basic nitrogenous compound with phosphoric acid that is dispersible as solid particles in an organic solvent. Support for this amendment may be found in the specification at page 13, lines 18-26. Accordingly, no new matter is added, and entry of this amendment is respectfully requested.

Claim Objections

Claim 10 is objected to over informalities. In the present amendment, claim 10 has been amended to change "or" to --and--. Accordingly, claim 10 has been amended as indicated by the Examiner. Withdrawal of the objection is respectfully requested.

Claim Rejections – 35 U.S.C. §112

Claim 11 is rejected under 35 U.S.C. §112, second paragraph as being indefinite. Claim 11 has been amended to change the phrase "said components" to --the insulating resin, the curing agent and the flame retardant--. Accordingly, this rejection is addressed by this amendment and withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 U.S.C. §102

1. Oishi

Claims 1-4, 6-10, 12 and 17-25 are rejected under 35 U.S.C. § 102(e) as anticipated by Oishi et al (US 6,676,920). For the following reasons, the Applicants respectfully traverse.

The rejection of pending claims 1-4, 6-10, 12 and 17-20 is overcome by the amendments to these claims. Independent claims 1, 12, 17, 18 and 20 are currently amended to recite that the flame retardant comprises a salt of a basic nitrogenous compound with phosphoric acid that is dispersible as solid particles in an organic solvent, respectively. The Applicants respectfully submit that Oishi et al. do not disclose such limitations.

Oishi et al. disclose a flame retardant composition comprised of a resin material, flame retardant magnesium hydroxide particles, curing agent and an organic solvent. However, the Applicants respectfully submit that Oishi et al. do not disclose a salt of a basic nitrogenous compound with phosphoric acid as flame retardant particles.

More particularly, Oishi et al. disclose magnesium hydroxide particles having a hexagonal crystal form and a specific aspect ratio. Oishi et al. describe that the magnesium hydroxide particles are suitable for use as a flame retardant for synthetic resin (column 4, lines 30-35). Oishi et al. describe that:

> The flame-retardant aid is preferably red phosphorus, a carbon powder or a mixture of these. The red phosphorus includes normal red phosphorus used for a flame retardant and others such as red phosphorus surface-coated, for example, with a thermosetting resin, a polyolefin, a carboxylate polymer, titanium oxide or a titanium-aluminum condensate.

Oishi et al., Column 10, lines 29-36.

The red phosphorus does not resemble the presently claimed salt of the basic nitrogenous compound with phosphoric acid. The red phosphorus is a mere inorganic compound and has

insufficient flame retardancy. In Oishi et al., the red phosphorus is only used as a flame-retardant aid for the flame retardant magnesium hydroxide particles.

On the other hand, the presently claimed salt of the basic nitrogenous compound with phosphoric acid may be obtained by thermal condensation reaction of a phosphoric acid source and a nitrogen source in the presence of a condensation agent comprising urea or urea phosphate or their mixture, and then burning the product. See page 14, lines 4-10 of the present specification.

In addition, the salt of the basic nitrogenous compound with phosphoric acid used in the present invention is uniformly dispersed in a varnish by surface-treating it with a specific surface treating agent and can exhibit an excellent flame retardant effect. See Examples 1 to 4. Further, Oishi et al. neither disclose nor suggest anything with regard to a varnish obtained by dispersing or dissolving magnesium hydroxide particles, a synthetic resin and a curing agent in an organic solvent.

In the Office Action, the Examiner indicates that the resin material, the $Mg(OH)_2$ particles and the curing agent are all added to water in the Oishi et al. reference. However, Oishi et al. only describe the fact that upon measurement of the average secondary particle diameter of magnesium hydroxide particles, water was added to sample powder, the resultant mixture was dispersed by ultrasonic waves, and the resultant dispersion was used to measure a particle size distribution (column 11, lines 21-38).

Oishi et al. show that magnesium hydroxide particles were mixed with various kinds of synthetic resins and an antioxidant, and each of the resultant mixtures was kneaded by a single-screw extruder to prepare pellets. See Oishi et al., Examples 15 to 21. In addition, Oishi et al. also show that magnesium hydroxide particles were kneaded together with EPDM rubber or an epoxy resin, and other additives to produce plates. See Examples 22 and 23. However, Oishi et al. neither teach nor suggest anything with regad to a synthetic resin, magnesium hydroxide particles and other additives being dissolved or dispersed in an organic solvent to prepare a varnish.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131, citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed, Cir, 1978). The Applicants respectfully submit that all of the elements of the present claims are not disclosed or suggested by Oishi et al.

It is therefore respectfully submitted that the presently claimed varnish, and the formed material defined by the present claims is not anticipated by Oishi et al. Accordingly, withdrawal of this rejection is respectfully requested.

2. Yamamoto

Claims 1-4, 9, 12-14 and 17-20 are rejected under 35 U.S.C. 102 (b) as anticipated by Yamamoto et al (US 6319619). For the following reasons, the Applicants respectfully traverse.

Yamamoto et al. disclose a semiconductor encapsulating resin composition comprised of a thermosetting resin, a hardening agent and a compound metal hydroxide of polyhedral crystal form. See Claim 1. Yamamoto et al. describe that where this particular compound metal hydroxide has an average particle diameter of 0.5-10 μm, an excellent flame retardant effect can be obtained. See Column 3, lines 59-64. However, the Applicants respectfully submit that Yamamoto et al. do not disclose the salt of the basic nitrogenous compound with phosphoric acid as flame retardant particles presently claimed.

As described above, Yamamoto et al. disclose a semiconductor encapsulating resin composition comprised of a specific metal hydroxide, a thermosetting resin and a hardening agent. This metal hydroxide is used as a flame retardant.

Yamamoto et al. do not disclose the presently claimed salt of the basic nitrogenous compound with phosphoric acid used as the flame retardant of the present invention. Yamamoto et al. only disclose red phosphorus as a phosphorus compound. As the surface treating agent for

red phosphorus, organic or inorganic compounds are only described, and there is no disclosure or suggestion relating to the surface treatment agent specified by the present application.

Yamamoto et al. describe that "the organic flame retardant may be blended with the resin composition after it is preliminarily mechanically mixed with the compound metal hydroxides. Alternatively, a flame retardant prepared by first dissolving the organic flame retardant in a solvent, then surface-treating the aforesaid compound metal hydroxides with the resulting solution and removing the solvent may be used" (column 7, lines 58-64).

In other words, that used as the surface treating agent in the cited reference of Yamamoto et al. is an organic flame retardant such as a melamine derivative, and not a phosphorus compound. Further, Yamamoto et al. neither discloses nor suggests anything with regard to a resin composition that is dissolved or dispersed in an organic solvent to prepare a varnish.

In the Office Action, the Examiner asserts that the resin composition of Yamamoto et al. is dispersed in a solvent. However, Yamamoto et al. only disclose that the surface treatment of the metal hydroxide with the organic flame retardant is conducted in the organic solvent. Yamamoto et al. only show that the respective components were melted and kneaded to obtain resin compositions (Examples 1 to 10).

The Applicants respectfully submit that all of the elements of the present claims are not disclosed or suggested by Yamamoto. It is therefore respectfully submitted that claims 1-4, 9, 12-14, and 17-20 are not anticipated by Yamamoto et al. Withdrawal of this rejection is therefore respectfully requested.

3. Imahashi

Claims 1, 3-4, 6, 8-9, 12-13 and 17-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Imahashi et al (US 6130282). For the following reasons, this rejection is respectfully traversed.

Imahashi et al. disclose a flame retardant resin composition comprised of flame retardant magnesium hydroxide particles and aluminum hydroxide particles, a synthetic resin and a solvent. Imahashi et al. describe that the magnesium hydroxide particles and the aluminum hydroxide particles can be treated with a surface treating agent. See Column 5, lines 18-49. The surface treating agent is at least one member selected from the group consisting of higher fatty acids, coupling agents and alcohol phosphoric esters.

However, Imahashi et al. neither disclose nor suggest the salt of the presently claimed basic nitrogenous compound with phosphoric acid surface treated with at least one surface treatment agent selected from the group consisting of a phosphorus compound soluble in an organic solvent, an organopolysiloxane and a dispersant having a carboxyl group. In addition, Imahashi et al. are silent with regard to a curing agent. Imahashi et al. are also silent with regard to their compositions being used as an insulating layer for PWB.

As described above, Imahashi et al. disclose the flame retardant resin composition comprised of the specific metal hydroxides and a resin. Imahashi et al. only disclose red phosphorus as a phosphorus compound. Imahashi et al. neither disclose nor suggest anything with regard to a salt of a basic nitrogenous compound with phosphoric acid used as the flame retardant as in the present invention.

Imahashi et al. only disclose thermoplastic resins, olefins, titanium oxide and the like as a surface treating agent for red phosphorus. See column 6, lines 30-36. In addition, the silane coupling agent disclosed in Imahashi et al. is a surface treating agent for the metal hydroxide, and not a surface treating agent for red phosphorus. Further, the silane coupling agent disclosed in Imahashi et al. is a compound different from the organopolysiloxane used in the present invention. Imahashi et al. do not disclose anything with regard to the use of the specific surface treatment agent recited in claim 1 of the present application. Imahashi et al. do also not disclose that a crosslinking agent is blended into the flame retardant resin composition. Further, Imahashi et al. do not disclose that the flame retardant resin composition is used in a varnish.

In the Office Action, the Examiner indicates that the solvent of Imahashi et al. is an organic solvent such as a triethanolamine solvent. See column 10, lines 6-7. However, the use of the organic solvent upon the surface treatment of the metal hydroxide with a titanate coupling agent is only described at the place indicated by the Examiner.

The Applicants respectfully submit that all of the elements of the present claims are not disclosed or suggested by Imahashi et al. It is therefore respectfully submitted that claims 1, 3-4, 6, 8-9, 12-13 and 17-25 are not anticipated by Imahashi et al. Withdrawal of this rejection is therefore respectfully requested.

Claim Rejections – 35 USC §103

Claims 1-4, 6-25 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Oishi et al. or Yamamoto et al. or Imahashi et al. For the following reasons, this rejection is respectfully traversed.

None of the 3 cited references neither disclose nor suggest anything with regard to a salt of a basic nitrogenous compound with phosphoric acid as used in the present invention. Further, the prior art neither discloses nor suggests anything with regard to flame retardant particles obtained by surface-treating the salt of the basic nitrogenous compound with phosphoric acid with the phosphorus compound soluble in an organic solvent, the organopolysiloxane or the dispersant having a carboxyl group as presently claimed.

In addition, the prior art neither discloses nor suggests anything with regard to a flame retardant resin composition that is prepared in the form of a varnish.

On the other hand, the varnish of the present invention ensures that the flame retardant has improved dispersion stability, and prevents agglomeration of the flame retardant particles even under high-temperature and humidity conditions. The electrical insulation film obtained by use of the varnish of the present invention is improved not only in interlayer insulation, but also in resistance to high temperature and humidity. A multilayer circuit board having an electrical

insulation film of the invention is usable as a printed wiring board for mounting semiconductor devices such as CPU's or memories, and many other mounting components in electronics such as computers and cellular phones.

Further, the present invention provides a process for the preparation of flame retardant particles for incorporation in the aforementioned varnish, a flame retardant slurry containing the flame retardant particles, and a varnish preparation process using said flame retardant slurry. There is no disclosure or suggestion in the prior art relating to the improvements provided by the presently claimed invention.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03. It is respectfully submitted that all of the limitations of claims 1-4 and 6-25 are not disclosed or suggested by Oishi et al. or Yamamoto et al. or Imahashi et al., and that the rejection under 35 U.S.C. §103 (a) has been overcome. Withdrawal of this rejection is respectfully requested.

Double Patenting

Claims 1-4, and 6-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-6, 7-9, 13, 31-37 and 39-40 of copending Application No. 10/398,284. For the following reasons, this rejection is respectfully traversed.

Copending Application No. 10/398,284 discloses that a flame retardant is surface-treated with a coupling agent. Copending Application No. 10/398,284 discloses silane compounds, metal ester compounds, metal complex compounds and metal chelate compounds as specific examples of the coupling agent.

However, the silane coupling agents disclosed in copending Application No. 10/398,284 are compounds different from the organopolysiloxane used in the invention of the present application. The organopolysiloxane used in the present invention is not a compound generally used as a coupling agent.

Copending Application No. 10/398,284 does not disclose the presently claimed salt of the basic nitrogenous compound with phosphoric acid surface treated with at least one surface treatment agent selected from the group consisting of a phosphorus compound soluble in an organic solvent, an organopolysiloxane and a dispersant having a carboxyl group.

Copending Application No. 10/398,284 discloses that contact of flame retardants with coupling agents causes the coupling agents to be physically or chemically bonded to the surface of the flame retardants to reduce the aggregation properties of the flame retardants, improving the dispersibility in vanish or insulating resins. See Application No. 10/398,284, page 23, lines 16-20. Coupling agents include silane compounds, metal ester compounds, metal complex compounds, and metal chelate compounds. See Page 23, lines 21-24.

However, the copending Application No. 10/398,284 does not disclose a surface treatment agent selected from the group consisting of a phosphorus compound soluble in an organic solvent, an organopolysiloxane and a dispersant having a carboxyl group. Furthermore, there is no disclosure or suggestion by copending Application No. 10/398,284 relating to the above discussed improvements provided by the presently claimed invention.

It is therefore respectfully submitted that the presently claimed invention is not obvious over claims 1, 3-6, 7-9, 13, 31-37 and 39-40 of copending Application No. 10/398,284. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact J. Mark Konieczny (Reg. No. 47,715) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____

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